

DETAILED ACTION

This supplemental Office action is hereby submitted to replace the previous non-final rejection submitted on 10/09/09. This will address the issue of missing drawing attachment requested by the applicant.

Response to Arguments

1. Applicant's arguments with respect to claims 1-3 and 5-10 have been considered but are moot in view of the new ground(s) of rejection. This rejection is being made non-final to afford the applicants the opportunity to respond to the new grounds of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 5, 6, 8 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,987,904 to Kim et al. (Kim).

In reference to claim 1, Kim teaches a cooling device (FIG. 2) comprising a cooler (11, FIG. 2) provided on at least one side-wall side (G, FIG. A, as annotated by the Examiner) formed with a thermal insulating box (inherent in a freezer construction as shown in Kim, see FIG. 2); a cooling chamber (F, FIG. A) in front of the cooler (11, FIG. 2); and a fan (20, FIG. 2) that allows air in the cooling chamber to flow, wherein the cooler and the cooling chamber are partitioned by a partition (C, FIG. A) so as to allow cold air to be accumulated in the cooler, the fan (20, FIG. 2) is disposed on a side of the cooler (11, FIG. 2) relative to the partition (C, FIG. A), the

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partition in front of the fan (20, FIG. 2) has an aperture (D, FIG. A) formed in a flat sheet portion (above and below partition C, FIG. A), an open space is formed between the fan and the flat sheet portion in which the aperture is formed (see FIG. 2), cold air accumulated in a space inside the partition, and hot air in the cooling chamber are exchanged by the fan (20, FIG. 2) through the aperture (D, FIG. A), wherein the rotation of the fan generates a discharged flow of cold air discharged from the cooler to the cooling chamber through the aperture and a sucked flow of cold air sucked from the cooling chamber to the cooler through the aperture, and the discharged flow and the sucked flow directed from the cooling chamber to the cooler collide with each other in a portion in which the aperture is provided (inherent in the structure as described in Kim, see FIG. 2).

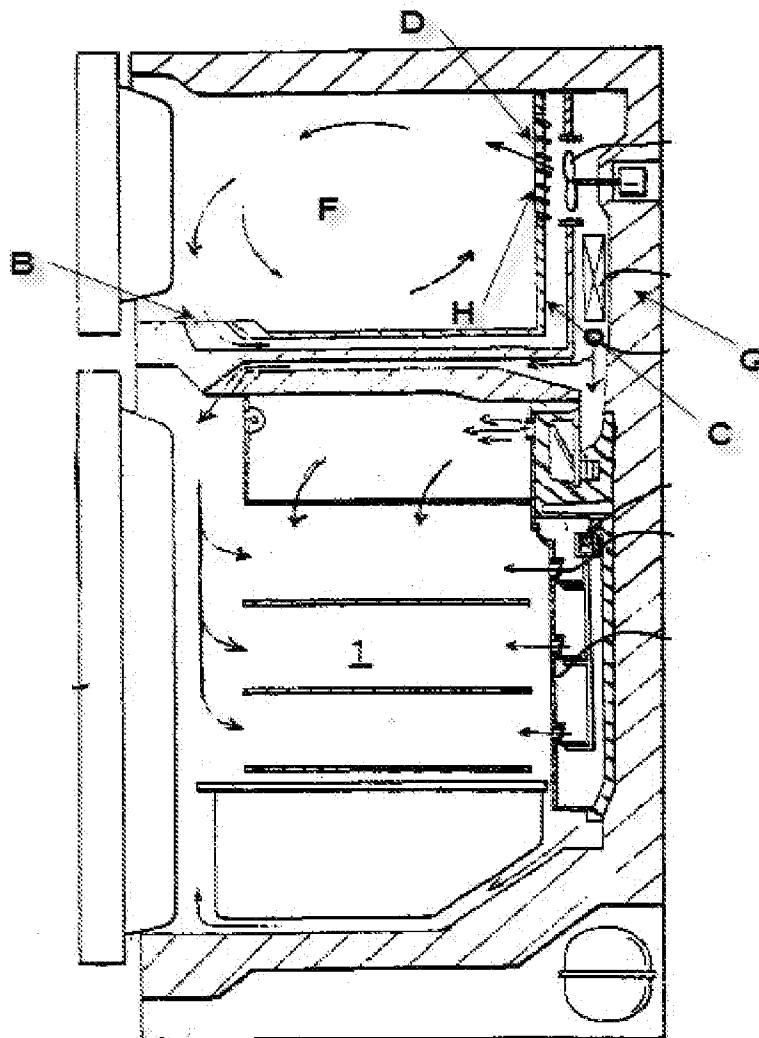


FIG. A, as annotated by the Examiner: A Cooling Device

In reference to claim 2, Kim discloses the cooling device as explained in the rejection of claim 1, and Kim also teaches that dimensions of the aperture (D, FIG. A) are larger than a diameter of the fan (20, FIG. 2).

In reference to claim 3, Kim discloses the cooling device as explained in the rejection of claim 2, and Kim also teaches that when viewing the fan (20, FIG. 2) in a direction of a rotation

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shaft of the fan, the fan is disposed in the aperture (D, FIG. A) and there is an open space outside the fan (in front and around of fan 20, FIG. 2).

In reference to claim 5, Kim discloses the cooling device as explained in the rejection of claim 1, and Kim also teaches that the discharged airflow and the sucked flow collide with each other, thus suppressing the flow speed of the cold air (inherent in the structure as described in Kim, see FIG. 2 and FIG. A).

In reference to claim 6, Kim discloses the cooling device as explained in the rejection of claim 1, and Kim also teaches that the fan (20, FIG. 2) is disposed above the cooler (11, FIG. 2).

In reference to claim 8, Kim discloses the cooling device as explained in the rejection of claim 1, and Kim also teaches that a slit (B, FIG. A) is formed in the partition (C, FIG. A) at a portion below the cooler (11, FIG. 2).

In reference to claim 10, Kim discloses the cooling device as explained in the rejection of claim 1, and Kim also teaches that a safety cover (grille H, FIG. A) is disposed over the fan aperture (D, FIG. A).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 7 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of U.S. Patent 4,420,679 to Howe (Howe).

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In reference to claims 7 and 9, Kim discloses the cooling device as explained in the rejection of claim 1, but does not explicitly teach that a fan application with an area of the aperture S and a diameter of the fan R satisfies a plurality of combinations, including the following relationship

$$1.5 \times \pi(R/2)^2 \leq S \leq 2 \times \pi(R/2)^2$$

Howe teaches (FIG. 3) that the aperture diameter is approximately twice the length of the fan sweep diameter, and therefore, meets the limitation criteria in order to advantageously create a more subtle temperature gradient throughout the chamber by way of enhanced mixing, and thereby, providing a more predictable environment within the enclosure for more predictable results

Therefore, it would thus have been obvious to one of ordinary skill in the art at the time of the invention was made to additionally modify Lazar by proportioning the fan to aperture ratio in accordance with

$$1.5 \times \pi(R/2)^2 \leq S \leq 2 \times \pi(R/2)^2$$

as taught by Howe in order to advantageously create a more subtle temperature gradient throughout the chamber by way of enhanced mixing, and thereby, providing a more predictable environment within the enclosure for more predictable results. It would have been further obvious to one of ordinary skill in the art at the time of the invention was made to modify the apparatus of Lazar with an oversized fan aperture with a plurality of proportions with said range in order to advantageously create a customized flow pattern, and thereby, further satisfying designers criteria to afford better results.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 4,144,720 to Subera et al. teach an air defrost system using secondary air band components.

U.S. Patent 5,941,087 to Lee teaches a refrigerator having an apparatus for preventing an air from flowing into the refrigerator.

U.S. Patent 4,044,570 to Ono et al. teaches a refrigerator with a driving motor outside of the refrigerator.

U.S. Patent 3,759,053 to Swaneck, Jr. teaches an air control for fresh food compartment quick chill operation.

U.S. Patent 6,584,799 to Jung et al. teaches a cooling air blowing apparatus of refrigerator.

U.S. Patent 6,381,982 to Kim teaches a cooling air circulating system for use in a refrigerator.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is 571-270-5846. The examiner can normally be reached on Monday-Friday, from 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisors, Frantz Jules or Cheryl Tyler can be reached on 571-272-6681 or 571-272-4834, respectively. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/F. Z./
Examiner, Art Unit 3744

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit
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10/7/09